

WHAT IS CLAIMED IS:

1. A method of stud bumping, comprising:  
providing a bonding head having a plurality of wire passages formed therein;  
5 disposing a plurality of wires through respective ones of the plurality of wire passages;  
providing a substrate having a plurality of bond pads;  
engaging the wires with respective ones of a first set of the bond pads;  
and  
10 forming a first set of stud bumps outwardly from respective ones of the first set of the bond pads.
2. The method of Claim 1, wherein the bonding head is formed from a ceramic.  
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3. The method of Claim 1, wherein the wires are formed from a material selected from the group consisting of gold and aluminum.
4. The method of Claim 1, further comprising causing a pitch between  
20 any two adjacent wire passages to be no more than 1000 microns.
5. The method of Claim 1, further comprising causing a pitch between any two adjacent wire passages to be no more than 200 microns.
- 25 6. The method of Claim 1, further comprising causing the wire passages to resemble an array selected from the group consisting of a linear array and a rectangular array.
7. The method of Claim 1, wherein the engaging and forming steps are  
30 each performed simultaneously.

8. The method of Claim 1, further comprising forming a second set of stud bumps outwardly from respective ones of a second set of the bond pads.

9. A system for stud bumping, comprising:  
a bonding head having a plurality of wire passages formed therein;  
a plurality of wires disposed through respective ones of the plurality of  
wire passages;

5 a substrate having a plurality of bond pads; and  
a robot coupled to the bonding head, the robot operable to form a first  
set of stud bumps outwardly from respective ones of a first set of the bond  
pads.

10 10. The system of Claim 9, wherein the bonding head is formed from a  
ceramic.

11. The system of Claim 9, wherein the wires are formed from a material  
selected from the group consisting of gold and aluminum.

15 12. The system of Claim 9, wherein a pitch between any two adjacent wire  
passages is no more than 1000 microns.

20 13. The system of Claim 9, wherein a pitch between any two adjacent wire  
passages is no more than 200 microns.

14. The system of Claim 9, wherein the wire passages resemble an array  
selected from the group consisting of a linear array and a rectangular array.

25 15. The system of Claim 9, wherein the robot is operable to simultaneously  
engage the wires with respective ones of the bond pads to form the stud bumps.

16. The system of Claim 9, further comprising forming a second set of  
stud bumps outwardly from respective ones of a second set of the bond pads.

17. A bonding head for simultaneously forming a plurality of stud bumps outwardly from respective ones of a plurality of bond pads formed on a substrate, comprising:

a generally rectangular body;

5 an array of wire passages formed in the body, each wire passage configured to accept a wire, the array selected from the group consisting of a linear array and a rectangular array; and

wherein a pitch between any two adjacent wire passages is no more than 1000 microns..

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18. The bonding head of Claim 17, wherein the body is formed from a ceramic.

19. The bonding head of Claim 17, wherein the wires are formed from a material selected from the group consisting of gold and aluminum.

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20. The bonding head of Claim 17, wherein a pitch between any two adjacent wire passages is no more than 200 microns.